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Docket No. LPTF02
US App. No. 10/500,419

REMARKS

Status of the Application

Claims 31-48 are pending, of which:

Claims 31, 34, 36, 37, 39, 40, 42, 45 and 46 were rejected both under 35 USC 112, second paragraph.

Claims 31-34 and 36 were rejected under 35 USC 103(a) as being unpatentable over Ogata (US 5,903,252) in view of Fukuzaki (US 5,635,684) and Ichikawa et al. (Japan publication JP 11-110135).

Claim 35 was rejected under 35 USC 103(a) as being unpatentable over Ogata, Fukuzaki, and Ichikawa as applied to claim 31, and further in view of Nishikawa et al. (US 6,847,355).

Claims 37-38 were rejected under 35 USC 103(a) as being unpatentable over Ogata, Fukuzaki, Ichikawa, and Nishikawa as applied to claim 35, and further in view of Knopf (US 7,170,468).

Claims 39-45 were rejected under 35 USC 103(a) as being unpatentable over Ogata, Fukuzaki, and Ichikawa as applied to claim 31, and further in view of Van Ruynbeke (US 6,380,930).

Claims 46-48 were rejected under 35 USC 103(a) as being unpatentable over Ogata, Fukuzaki, and Ichikawa as applied to claim 31, and further in view of Takala et al. (US 6,788,294).

Applicant has amended claims 31-48 and added new claim 49. No new matter adds through the amendments. For the reasons discussed below, withdrawal of the rejections is requested.

Claim Rejections- 35 U.S.C. 112, Second Paragraph

Claims 31, 34, 36, 37, 39, 40, 42, 45 and 46 were rejected both under 35 USC 112, second paragraph, for lack of antecedent basis and other informalities.

Applicant has carefully reviewed and amended claims 31, 34, 36, 37, 39, 40, 42, 45 and 46. It is believed the amendments made to these claims overcome the rejections.

Withdrawal of the rejection is requested.

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Claim Rejections- 35 U.S.C. 103(a)

Claims 31-34 and 36 were rejected under 35 USC 103(a) as being unpatentable over Ogata (US 5,903,252) in view of Fukuzaki (US 5,635,684) and Ichikawa et al. (Japan publication JP 11-110135).

Applicant has amended claims 31-34 and 36 to correct informalities and to more clearly define the invention. Applicant respectfully traverses the above rejections for reasons discussed below.

Claim 31 as amended reads as:

"An electronic whiteboard with built-in membrane antenna array lattice electromagnetic induction layer, including: a writing input portion; a covering frame provided around the periphery of the electronic whiteboard; and a control circuit; wherein the writing input portion has a multilayer structure and is enclosed by the frame, said writing input portion includes a surface writing layer, an underlayer, and an input induction layer which is provided between the surface writing layer and the underlayer and is connected to a control circuit by its output, characterized in that: *said induction layer comprises an antenna array etched or printed on an insulation membrane* and arranged along with X, Y axes of the electronic whiteboard, wherein an area enclosed by each lattice unit formed by the antenna array constitutes one induction cell, *said insulation membrane is a film material*".

None of the cited references teaches the above emphasized features of claim 31.

The Office Action acknowledged that Ogata fails to teach the "membrane antenna array", "an underlayer", "induction layer", "insulation layer", "shield layer" and "buffering layer", but cited Fukuzaki to "show that the concept of utilizing a membrane antenna arrays of interlaced conductors (figure 3) in a touch panel is old", and cited Ichikawa to "show that the concept of utilizing an induction layer (50, an insulating layer (6), a shield layer (4) and a buffering layer (the second layer 6) in a touch panel is old". Therefore, the present invention as defined in claims 31-34 and 36 would have been obvious to a person of ordinary skill in the art when the invention was made.

Applicant respectfully disagrees.

Ogata discloses a multi-plane electronic whiteboard using an optical reading mechanism which includes a fluorescent lamp 14, a light reflector 15, a focusing lens 16, an image sensor 17,

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and a circuit unit 18 (Fig. 2). Fukuzaki teaches a device for detecting position. The device of Fukuzaki has an induction layer including a plurality of antennae in which three or more turns of loop coils are arranged in parallel. (Abstract) In the background section of his patent, Fukuzaki clearly teaches that "it is known that the loop coil for transmitting or receiving electromagnetic wave operates more effectively as the number of turns of the coil becomes larger". (Col. 2, lines 51-54) Fukuzaki does not teach that the loop coils in the induction layer are formed by etching or printing on an insulation membrane. Fukuzaki also fails to teach that the insulation membrane is a film material. Ichikawa teaches an electromagnetic induction type transparent coordinate input board, wherein the insulating sensor wires 7 and 7 are embedded into the insulating layer 5 to form an induction layer. Ichikawa further teaches that the wires 7 use the extra fine wires having diameters of 50 µm or less. (Abstract) Clearly, the induction layer (i.e., the insulating sensor wires 7 and 7 embedded in the insulating layer 50 is not formed by etching and printing on an insulation membrane. Therefore, Ichikawa does not teach or suggest that the loop coils in the induction layer are formed by etching or printing on an insulation membrane.

The above differences are technically and economically significant. As stated on page 1 of the specification, for electronic whiteboard with large induction area, it is practically impossible to manufacture the electromagnetic induction type electronic whiteboard by etching a printed circuit board nor to manufacture the resistance-induction type electronic whiteboard by using a touching screen because of high cost. The present invention as defined in claim 31 uses an induction layer comprising an antenna array etched or printed on an insulation membrane of a film material. It significantly reduced the production cost of large screen whiteboards.

For at least the reasons discussed above, claim 31 is patentable over Ogata, Fukuzaki, and Ichikawa. Claims 32-34 and 36 depend from claim 31 and, thus, are also patentable over Ogata, Fukuzaki, and Ichikawa for at least the same reasons.

In addition, these dependent claims contain features that further distinguish over the cited references. For example, claim 34 recites that "the antenna array is formed by etching a copper-platinum covering on the insulation membrane". None of the cited references teaches or suggests this feature.

Claim 35 was rejected under 35 USC 103(a) as being unpatentable over Ogata, Fukuzaki, and Ichikawa as applied to claim 31, and further in view of Nishikawa et al. (US 6,847,355).

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Firstly, Nishikawa fails to teach an induction layer comprising an antenna array etched or printed on an insulation membrane of a film material as recited in claim 31. Therefore, Nishikawa cannot cure the above discussed deficiencies of Ogata, Fukuzaki, and Ichikawa and, thus, claim 31 as well as its dependent claim 35 are patentable over Ogata, Fukuzaki, Ichikawa, and Nishikawa.

Furthermore, claim 35 recites that "the antenna array is formed by a silver paste or a mixture of silver paste and carbon paste which is printed on the insulation membrane". Nishikawa does not teach or suggests this feature either.

In rejecting claim 35, the Office Action cited Nishikawa and asserted that "the concept of utilizing conductive layers formed by silver paste or the mixture of silver paste and the carbon paste is old". Applicant never claims that the use of silver paste or the mixture of silver paste and the carbon paste as conductive layers is new. However, forming an antenna array of an induction layer in an electronic whiteboard by printing a silver paste layer or a silver/carbon paste layer on an insulation membrane of a film material is new and not taught by Nishikawa or any other prior art. In Nishikawa, a conductive paste such as carbon paste or the like is used for connection electrodes 15, 16 and lead electrodes 13, 14, 23, and 24. Col. 8, lines 1-11 and Fig. 4. As shown in Fig. 4, connection electrodes 15, 16 and lead electrodes 13, 14, 23, and 24 are totally different from the antenna array of the induction layer of the present invention as recited in claim 35.

For at least the reasons discussed above, claim 35 standing alone is patentable over Ogata, Fukuzaki, Ichikawa, and Nishikawa.

Claims 37-38 were rejected under 35 USC 103(a) as being unpatentable over Ogata, Fukuzaki, Ichikawa, and Nishikawa as applied to claim 35, and further in view of Knopf (US 7,170,468).

Firstly, Knopf fails to teach an induction layer comprising an antenna array etched or printed on an insulation membrane of a film material as recited in claim 31. Therefore, Knopf cannot cure the above discussed deficiencies of Ogata, Fukuzaki, and Ichikawa and, thus, claim 31 as well as its dependent claims 37-38 are patentable over Ogata, Fukuzaki, Ichikawa, and Knopf.

Furthermore, claim 37 recites that "said induction layer is made up by a plurality of pieces of membrane with antenna array formed thereon by etching or printing, wherein a X-Y directional antenna array induction electrical connection means is provided on each piece of membrane, and

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said each piece of membrane is connected by means of the X-Y directional antenna array induction electrical connection means". Knopf does not teach or suggests this feature either. Knopf teaches a portable computer display device. One or more sections on a housing of the portable computing display device are selectively removed or folded away, thereby exposing a free edge of the display screen as well as electrical connectors and structural connectors. Two or more such devices are docked utilizing the exposed connectors such that the exposed screen edges abut. Upon docking, the devices recognize the new configuration and the re-map the desktop area of the display into a single display for the combined device. (Col. 1, Summary of the Invention) Clearly, Knopf only teaches to combine two or more screens into a single display. Knopf fails to teach or even remotely suggest making up an induction layer by a plurality of pieces of membrane with antenna array formed thereon. A display such as LCD screen 108, 308 (Col. 3, line 48) in a portable computer is quite different from an induction layer in an electronic whiteboard.

For at least the reasons discussed above, claims 37 and 38 standing alone is patentable over Ogata, Fukuzaki, Ichikawa, Nishikawa, and Knopf.

Claims 39-45 were rejected under 35 USC 103(a) as being unpatentable over Ogata, Fukuzaki, and Ichikawa as applied to claim 31, and further in view of Van Ruynbeke (US 6,380,930).

Van Ruynbeke was cited to teach the mounting components of a control circuit on a printed circuit board. However, Van Ruynbeke clearly cannot cure the deficiencies of Ogata, Fukuzaki, and Ichikawa. Van Ruynbeke fails to teach or suggest an induction layer comprising an antenna array etched or printed on an insulation membrane of a film material as recited in claim 31. Therefore, claim 31 as well as its dependent claims 39-45 are patentable over Ogata, Fukuzaki, Ichikawa, and Van Ruynbeke.

Claims 39-45 also recite features that further distinguish over Ogata, Fukuzaki, Ichikawa, and Van Ruynbeke. As the reasons discussed in connection with claim 31 is sufficient for the patentability of claims 39-45, no details discussion regarding the patentable features contained in claims 39-45 are given here.

Claims 46-48 were rejected under 35 USC 103(a) as being unpatentable over Ogata,

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Fukuzaki, and Ichikawa as applied to claim 31, and further in view of Takala et al. (US 6,788,294).

Takala was cited to teach that "the concept of utilizing a flexible and foldable touch input membrane is old". However, Takala clearly cannot cure the deficiencies of Ogata, Fukuzaki, and Ichikawa. Takala fails to teach or suggest an induction layer comprising an antenna array etched or printed on an insulation membrane of a film material as recited in claim 31. Therefore, claim 31 as well as its dependent claims 46-48 are patentable over Ogata, Fukuzaki, Ichikawa, and Takala.

Claims 46-48 also recite features that further distinguish over Ogata, Fukuzaki, Ichikawa, and Takala. As the reasons discussed in connection with claim 31 is sufficient for the patentability of claims 46-48, no details discussion regarding the patentable features contained in claims 46-48 are given here.

New Claims

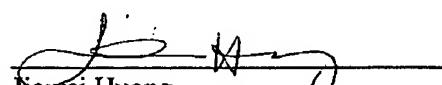
New claim 49 is added. Claim 49 is a portion of the original claim 35. It is believed that the features recited in claim 49 are not taught by the cited references.

Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that all pending claims 31-49 are now in condition for allowance. Allowance of this application is earnestly solicited.

Respectively submitted
J.C. PATENTS

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Jiawei Huang
Registration No. 43,330

4 Venture, Suite 250
Irvine, CA 92618
Tel.: (949) 660-0761